

Claims

1. Apparatus for connecting a riser to a subsea wellhead assembly, comprising:
a tie-back connector for connection to the wellhead assembly, the connector including an elongate tubular tie-back body; and
a tie-back flange having first and second axial ends, with said first end having a connection for separable connection to an axial end of the tie-back body and said second end having a mating face for connecting to a riser facing the mating face.
2. An apparatus as defined in Claim 1, further comprising:
a riser flange mechanically connected to a riser, the riser flange having a mating face for engagement with the mating face of the tie-back flange; and
securing structure for securing the riser flange to the tie-back flange at their mating faces.
3. An apparatus as defined in Claim 2, wherein the tie-back connector and the riser flange are of dissimilar materials.
4. An apparatus as defined in Claim 3, further comprising:
an insulator for electrically insulating between the tie-back body and the riser flange.
5. An apparatus as defined in Claim 4, wherein the insulator comprises:
an insulation ring between the tie-back body and the riser flange.
6. An apparatus as defined in Claim 4, wherein the insulator comprises:
one or more insulation washers positioned between a corresponding one or more threaded members joining the riser flange with the tie-back flange.
7. An apparatus as defined in Claim 1, further comprising:
a threaded connection between the tie-back flange and the tie-back body.

8. An apparatus as defined in Claim 1, wherein the mating face of the tie-back flange mates with a mating face of a riser flange.
9. An apparatus as defined in Claim 8, further comprising:
a sandwich flange for positioning between the mating faces of the tie-back flange and the riser flange.
10. An apparatus as defined in Claim 9, wherein the sandwich flange comprises:
an insulating material for electrically insulating between the riser flange and the tie-back flange.
11. An apparatus as defined in Claim 1, further comprising:
a radially movable latch member for connecting the tubular tie-back body and the tie-back flange, the latch member comprising upper and lower teeth adapted to engage grooves about adjacent ends of the tubular tie-back body and the tie-back flange when the latch member is moved radially inwardly.
12. An apparatus as defined in Claim 11, wherein the radially movable latch member comprises:
mechanically actuated dogs or a C-ring locking member.
13. An apparatus as defined in Claim 1, wherein an internal diameter of one or more components of the tie-back connector is greater than an external diameter of a riser flange adapted to connect to the tie-back connector.
14. An apparatus as defined in Claim 1, where an external diameter of one or more components of the tie-back connector is less than an internal diameter of a riser flange adapted to connect to the tie-back connector.

15. An apparatus as defined in Claim 1, further comprising:
a seal member for sealing between the riser flange and the tubular tie-back body.

16. An apparatus as defined in Claim 2, wherein the tie-back body is a low alloy steel and the riser flange is a titanium alloy.

17. Apparatus for connecting a riser stress joint to a subsea wellhead assembly, comprising:
a tie-back connector for connection to the wellhead assembly, the tie-back connector including an elongate tubular tie-back body;
a tie-back flange mechanically connected to the tie-back body, the tie-back flange having a mating face facing upwardly from the tie-back connector for connecting to the riser stress joint, the tie-back flange comprising different materials than materials comprising the riser stress joint; a riser flange connected to one axial end of the riser stress joint, the riser flange having a mating face facing away from the riser stress joint, for mating with the mating face of the tie-back flange;
a threaded connection between the tie-back flange and the tie-back body; and
electrical insulation material separating the different materials of the tie-back connector and the riser flange.

18. Apparatus for connecting a riser to a subsea wellhead assembly, comprising:
a tie-back connector for connection to the wellhead assembly, the tie-back connector including an elongate tubular tie-back body;
a tie-back flange mechanically connected to the tie-back body, the tie-back flange having a mating face facing upwardly from the tie-back connector for connecting to the riser, the tie-back flange comprising different materials than materials comprising the tie-back body;

a riser flange mechanically connected to the riser, the riser flange having a mating face facing downwardly from the riser;

a threaded connection between the tie-back flange and the tie-back body;

a sandwich flange for positioning between the mating faces of the tie-back flange and the riser flange, the sandwich flange comprising an insulating material for electrically insulating between the riser flange and one or more of the tubular tie-back body and the tie-back flange;

one or more threaded members passing through and joining the sandwich flange, the riser flange, and the tie-back flange; and

one or more insulation washers positioned between a corresponding one or more threaded members joining the riser flange with the tie-back flange.

19. Apparatus for connecting a riser to a subsea wellhead assembly, comprising:

a tie-back connector for connection to the wellhead assembly, the tie-back connector including an elongate tubular tie-back body;

a tie-back flange mechanically connected to the tie-back body, the tie-back flange having a mating face facing upwardly from the tie-back connector for connecting to the riser, the tie-back flange comprising different materials than materials comprising the tie-back body;

a riser flange mechanically connected to the riser, the riser flange having a mating face facing downwardly from the riser for mating with the mating face of the tie-back flange;

a radially movable latch member for connecting the tubular tie-back body and the tie-back flange, the latch member comprising upper and lower teeth adapted to engage grooves about adjacent ends of the tubular tie-back body and the tie-back flange when the latch member is moved radially inwardly;

one or more threaded members passing through and joining the sandwich flange, the riser flange, and the tie-back flange; and

an insulator including an insulation ring between the tubular tie-back body and the tie-back flange and one or more insulation washers positioned between a

corresponding one or more threaded members joining the riser flange with the tie-back flange.

20. A connection structure for securing a stress joint to a subsurface wellhead, comprising:
an elongate, tubular connection body having first and second axial ends;
a wellhead engagement structure at the first axial of the body and stress joint connection structure at the second axial end of the body; and
electrical insulating material carried at the second axial end of the tubular connection body for electrically insulating the connection body from a stress joint connection structure.

21. A connection structure as defined in Claim 20 wherein said stress joint connection structure comprises a first flanged connection adapted to mate with a second flanged connection at an axial end of a stress joint.

22. Connection structure as defined in Claim 21 wherein said electrical insulating material is carried in the mating face of said first flanged connection.

23. The connection structure as defined in Claim 21 wherein said first flanged connection is threadably engaged to said tubular connection body.

24. The connection structure as defined in Claim 21 wherein said first flanged connection is connected to said tubular connection body by a radially movable clamping element.